Curriculum Vitae
MONICA TORRES

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PROFESSIONAL EXPERIENCE

- Sep 2002 – present
  Ralph Boas Assistant Professor of Mathematics, Northwestern University.
  Postdoctoral mentor: Professor Gui-Qiang Chen.

- Jan 1994 – Jan 1995
  Software development for the Instituto Tecnologico y de Estudios Superiores de Monterrey
  (ITESM). Queretaro, Mexico.

EDUCATION

- Ph.D. in Mathematics [Aug 1997 – June 2002]
  Department of Mathematics, University of Texas at Austin.
  Thesis Advisor: Professor Luis Caffarelli.

- Visiting Scholar [Aug 2001 – Aug 2002]
  Department of Mathematics, University of California at Berkeley.
  Mentor: Professor Craig Evans.

- M.S. in Mathematics [Jan 1995 – Jun 1997]
  Centro de Investigacion en Matematicas, CIMAT. Guanajuato, Mexico.
  Advisor: Professor Fernando Galaz.

- B.S. in Computer Science [Aug 1989 – Dec 1993]
  Instituto Tecnologico y de Estudios Superiores de Monterrey, ITESM. Queretaro, Mexico.
  (*summa cum laude*)

PUBLICATIONS

- *Generalized Snell's law for weighted minimal surfaces in heterogeneous media*, with Zhilin
  Li, Xiaobiao Lin and Hongkai Zhao, **MAA, Methods and Applications of Analysis**,
  Vol. 10, No. 2, pp. 199-214, June 2003.

- *Plane-like minimal surfaces in periodic media with exclusions*, **SIAM Journal on Mathematical Analysis**, Vol. 36, No. 2, pp. 523-551, August 2004.

- *Level set methods to compute minimal surfaces in a medium with exclusions*, with David
  Chopp and Timothy Walsh, **Interfaces and Free boundaries**, accepted for publication.

- *Divergence-measure fields, sets of finite perimeter and conservation laws* , with Gui-Qiang
  Chen, to appear in **Archive for Rational Mechanics and Analysis**.

PREPRINTS AND PAPERS IN PREPARATION

- *Cauchy flux, balance laws and divergence-measure fields*, with Gui-Qiang Chen and William
  Ziemer, preprint.

- *Normal traces for divergence-measure fields in L^p*, with William Ziemer and Gui-Qiang
  Chen, in preparation.

RESEARCH INTERESTS

- Partial differential equations (PDE).

- Calculus of variations, geometric measure theory and applications.

- Nonlinear conservation laws and shock waves.

- Computational methods for solving PDE (such as level set methods and finite elements)

AWARDS

- **"Distinguished Alumni" of the Masters Program**
  Centro de Investigacion en Matematicas, CIMAT (August 2003).

- **Graduate Research Assistantship**
  University of Texas at Austin (2001-2002).

- **CONACYT Doctoral Scholarship**
  Mexican Government (1997-2000).

- **Excellence Undergraduate Fellowship**
  Instituto Tecnologico y de Estudios Superiores de Monterrey (1989-1993).

- **Olympiad of Mathematics**
  First National Place (1988-1989).

SOME TALKS GIVEN AT CONFERENCES AND SEMINARS

- *Level set methods to compute minimal surfaces in a medium with exclusions*, invited lecture, Free and Moving Boundaries Analysis, Simulation and Control, Houston, Tx, December 2, 2004.

- *Divergence-measure fields and conservation laws*, Second Symposium on Analysis and PDE, Purdue University, July 2004.

- *Divergence-measure fields and conservation laws*, International Symposium on Multidimensional Conservation Laws and Related Topics, Shanghai Jiao Tong University, China, December 2003.

- *Divergence-measure fields, sets of finite perimeter and conservation laws*, Workshop on Multidimensional Euler Equations and Conservation Laws, University of Pittsburgh, November 2003.

- *Divergence-measure fields and nonlinear conservation laws*, First Chicago Area PDE workshop, October 2003.

- *Divergence-measure fields and conservation laws*, International Conference on Nonlinear Evolution Equations and Applications, Northwestern University, June 2003.

- *Plane-like minimal surfaces in periodic media with exclusions*, PDE seminar, University of California at Berkeley, November 2001.

- *Plane-like minimal surfaces in periodic media with exclusions*, Conference on Calculus of Variations, Toronto, Canada, August 2001.

- *Plane-like minimal surfaces in periodic media with exclusions*, Texas PDE Conference, Houston, April 2001.

- *Harnack inequality*, PDE Seminar, University of Texas at Austin, December 1999.

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- *Sharp constants for Nash inequality*, Analysis Seminar, University of Texas at Austin, December 1998.

TEACHING EXPERIENCE

- Northwestern University

  Elliptic Partial Differential Equations of Second Order (Graduate class, Spring Quarter 2003).
  Hyperbolic conservation laws and Hamilton-Jacobi equations (Graduate class, Spring Quarter 2004).
  Multivariable Calculus (Fall Quarter 2002, Winter Quarter 2003, Fall Quarter 2003 and Fall Quarter 2004).
  Calculus for the Behavioral Sciences (Winter Quarter 2003).
  Vector Calculus (Fall Quarter 2003).
  Integral Calculus (Winter Quarter 2004).

- University of Texas at Austin

  TA for Ordinary Differential Equations and Linear Algebra.

REFERENCES

- Gui-Qiang Chen (gqchen@math.northwestern.edu)
  Department of Mathematics
  Northwestern University
  2033 Sheridan Road
  Evanston, IL 60208-2730.

- Lawrence C. Evans (evans@math.berkeley.edu)
  Department of Mathematics
  University of California at Berkeley
  970 Evans Hall #3840
  Berkeley, CA 94720-3840

- Luis Caffarelli (caffarel@math.utexas.edu)
  The University of Texas at Austin
  Department of Mathematics
  1 University Station C1200
  Austin, TX 78712-0257

- William P. Ziemer (ziemer@indiana.edu)
  Indiana University
  Department of Mathematics
  Rawles Hall
  Bloomington, IN 47405